Title: **COLLECTION OF NATURAL SEAWATER**

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1.0 OBJECTIVE

This section describes how to collect natural seawater from the field for use in the laboratory.

2.0 HEALTH AND SAFETY

2.1 Typically, water is collected from a relatively pristine site and therefore the only PPE (Personnel Protective Equipment) required is rubber waders. If known or suspected contaminated water is to be collected, refer to SOP????.

2.2 Because such a large amount of water is collected, persons driving the truck should be familiar with the operation of a vehicle under heavy load.

2.2.1 The driver of the truck should check the air pressure of the tires of the truck and the condition of the tires themselves. If tires show signs of uneven wear or separation, do not attempt to collect water.

2.2.2 Drivers should allow twice the amount of distance to stop the truck, triple when raining.

2.3 As with any field operation, a minimum of two persons is required for this procedure. Never attempt to take any field sample alone.

2.4 Collection personnel must file a float plan with the Program Director (Mike Fulton), Branch Chief (Geoff Scott), or Acting Branch Chief.

3.0 PERSONNEL/TRAINING/RESPONSIBILITIES

3.1 A minimum of two personnel is required for this procedure.

3.2 Persons collecting water must be trained on how to use the collection pump, batteries, and tank.

3.2.1 The mesocosm coordinator (currently Paul Pennington) or someone who has already been trained by the mesocosm coordinator must accompany persons wanting to collect water on their first trip.

3.2.2 On this trip, the persons needing the water will be trained in the water collection procedure.

3.3 The mesocosm coordinator is responsible for the condition and safe operation of the water collection system.

3.4 Persons collecting water are responsible for:

3.4.1 Returning the equipment in a clean condition,

3.4.2 Properly storing equipment,

3.4.3 Reporting any damaged or faulty equipment to the mesocosm coordinator,

3.4.4 Reporting any problems with truck or vehicles to the Facility Manager (currently Martin Burnett).

4.0 REQUIRED AND RECOMMENDED MATERIALS

4.1 Required Materials:

4.1.1 Collection Pump (12V DC) and hose

4.1.2 250 gallon Collection Tank

4.1.3 12V deep cycle marine battery

4.1.4 Yellow floats

4.1.5 ½" Diameter Rope

4.1.6 Cargo Bar

4.1.7 Rubber Waders

4.1.8 Refractometer, Salinometer (YSI 85), or Conductivity Meter

4.1.9 Electrical Repair Kit (wire, crimpers, butt connectors, and electrical tape)

4.1.10 Crew Cab Truck (4 door Ford or 4 door GMC – DO NOT USE THE DODGE Pick-up)

5.0 PROCEDURE

5.1 Preparation for Trip

5.1.1 Load 250 gallon collection tank into truck.

5.1.1.1 The tank must be placed as far forward in the bed of the truck as possible (directly behind cab of truck).

5.1.1.2 Secure the tank in place using the ½" rope and the tie downs available on the truck.

5.1.1.3 Place the cargo bar directly behind the tank so that it is firmly against the tank.

5.1.2 Load all other material into truck.

5.1.3 Prior to loading the deep cycle battery, check the battery voltage to make sure that it has a minimum of 12.4 volts. The sealed "gel-cell" deep cycle batteries are the best to use.

5.1.4 File a float plan.

5.2 Travel to site

5.2.1 The current collection site is the Cherry Point Boat Landing on Wadmalaw Island, SC off of Maybank Highway.

5.2.2 Plan your trip so that you are at the boat ramp at high tide.

5.3 Upon arrival to site

5.3.1 Back the truck down the boat ramp, unless there are many boats being loaded and unloaded. Please wait until all boat and trailer traffic has cleared.

5.3.2 Apply the Parking Brake of the truck.

5.3.3 Check the salinity of the water. If the salinity is less than 20 ppt, do not collect. The preferred salinity is approximately 30 ppt.

5.3.4 Visually inspect the water at the ramp. If you can see an oily, hydrocarbon sheen on the water, do not collect seawater. This can typically occur on days when many boaters are using the ramp. It is best to schedule your trip on days when boat traffic is at a minimum (e.g. Memorial Day Weekend would be a bad time to collect water).

5.4 Water collection

5.4.1 Open the collection tank

5.4.2 Place the end of the hose in the tank

5.4.3 Someone wearing the waders must hold the other end of the hose (with the pump) in the water at the boat ramp. Use the yellow floats to hold the pump in the water column. **DO NOT LET THE PUMP TOUCH THE SEDIMENT OR THE SUBSTRATE OF THE BOAT RAMP.**

5.4.4 The other person should then connect the pump lead wires to the battery. Red to positive (+) and black to negative (-).

5.4.5 Check to make sure that the water is pumping. It will take about 15-25 minutes to completely fill the tank. **CAUTION: THE TANK MUST BE FILLED TO CAPACITY TO AVOID SLOSHING DURING TRANSIT BACK TO THE LAB. IF WATER IS ALLOWED TO SLOSH IN THE TANK, SIGNIFICANT DAMAGE MAY OCCUR TO THE TRUCK AND PASSENGERS**

5.4.6 When tank is full, disconnect lead wires to battery.

5.4.7 Remove hose from tank and drain remaining water in hose back to the river.

5.4.8 Place cap on tank and load all materials back into truck

5.4.9 Drive the truck up the ramp and park truck in the parking area at the boat ramp.

5.5 Departing for the Lab

5.5.1 Driver should walk around the truck and inspect the tires to make sure that the load is not adversely affecting them. Check for low air and bulges in the tires. If there is problem, do not attempt to drive the truck back to the lab under heavy load. The water must be drained back into the river.

5.6 Travel to the Lab
- 5.6.1 Refuel truck if necessary (if less than ½ tank).
- 5.6.2 Upon arrival to the lab, park the truck besides building 500 between the greenhouse and the old trailer office.

5.7 Unloading Water at the Lab
- 5.7.1 Typically, the water is offloaded into the large containers in the greenhouse.
- 5.7.2 Place the end of the hose with the pump into water tank. Extended the other end of the hose into the greenhouse and into one of the large tanks. You may need to secure the hose to keep it in the tank.
- 5.7.3 Connect the battery leads to the battery.
- 5.7.4 When the water is completely offloaded, disconnect battery leads and remove hose from tank.
- 5.7.5 Remove all materials from truck, including collection tank.

5.8 Clean-up
- 5.8.1 Rinse out tank with tap water three times. Place cap on tank and cover tank with tarp. Secure tarp onto tank with ½" rope. Store the tank outside the greenhouse on the concrete pad.
- 5.8.2 Rinse out hose and pump with tap water by pumping water from a bucket using the pump. Spray battery leads with Marine CRC Spray and WD-40. After allowing the battery leads to air dry for a moment, place the leads into a plastic bag to protect them.
- 5.8.3 Return all materials to proper place.
- 5.8.4 Recharge battery to >12 volts.
- 5.8.5 Report to the person that you filed the float plan with and let them know that you have returned from the field safely.
- 5.8.6 Report any equipment damage or failure to the mesocosm coordinator.
- 5.8.7 Report any vehicle damage or failure to the facilities manager.

6.0 QUALITY CONTROL/QUALITY ASSURANCE

6.1 Calibrate the refractometer or saliniometer prior to use according to the manufacturer's method. Please refer to SOP ????? for further instructions.

6.2 Several times per year, water collected from the collection site (Cherry Point) should be analyzed for baseline chemical and biological contaminant loads. This information should be stored in the CCR sample database.

7.0 REFERENCES

NONE

8.0 TABLES

NONE